

***Economic literacy:
financial costs and social implications***

Emiliano Mandrone

Economic literacy

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Abstract. *What is the ability of Italians to understand wider economic and financial dimensions? Do they know what they do when they invest their savings, use credit cards or gamble with their money? Knowing how to handle the numbers, terms, and norms that we use is a major issue for the ever-increasing implications that financial capacity will have on our lives. Not only consumption or savings, but also insurance, housing and employment choices, public services and school choices along with democratic participation require a good level of economic literacy. This article seeks to identify cognitive and regulatory limits and both individual and collective tools to defend from so many occasions where the economic dimension involves the possibility of financial loss or cost-opportunity and the implications that an improvement in economic literacy may lead to the interpretation of one's own situation.*

Keywords: economic literacy, risk, financial capability, cognitive ability, choices

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“A worker knows 100 words, a boss 1000. This is why he’s the boss”.

Don Lorenzo Milani summed up functional inequality in the 1950s.

Perhaps today some numbers could be added to this.

1 Introduction

Economic literacy is a component of Education and as such contributes in giving individuals the necessary tools to actively participate in society. It has long been neglected, almost seen as a secondary branch of knowledge relegated to the margins of what we consider Culture. It is viewed as an applied science, and not part of the classic *cursus studiorum*, but instead left aside as a special course. This attitude has contributed to a systemic shortfall among the population and the belated solutions have resulted in mere training courses.

Ideally, economic literacy (EL) should begin at a young age and over time lead to a consciousness of financial behaviour, just like the study of grammar contributes to a good command of language and civics instruction leads to the development of civic awareness.

EL is therefore a form of cultural investment in well-being, just as dietary education is for health (Edufin).

You pay for ignorance. Lusardi and Tufano (2015) and de Bassa Scheresberg (2013) noted that people with low financial skills pay higher commissions, obtain loans at the worst conditions and make their savings yield less. They frequently turn to loans (indebtedness) and save less (Stango and Zinman, 2009), do not correctly plan their budget, have worse pensions (Behrman et al., 2012; Lusardi e Mitchell, 2014) and do not diversify their investments (Abreu and Mendes, 2010).

As noted by Linciano (2017) “there are many economic and financial promotional initiatives put forward but they are extremely fragmented²: they should be brought back into a system”. It would be more reassuring if the school system, a more neutral environment that is open to comparison, provided a primer to all. Instead, one starts with a certain amount of inconclusive preconceptions, and the more questionable the hypotheses the less shared is the theory.

The Oecd (Atkinson and Messy, 2012) defines *EL* as “being able to consciously take part in the economic choices of one’s life” (par. 2). This idea, though broad, is in fact reductive: civil participation of individuals cannot leave out full awareness of wider economic dimensions. In a holistic sense each choice of the individual would be put into a collective frame, in which relations are temporary, conditioned, not fixed and dependant on the movement of all the agents(individuals, businesses)and of the system of reference(institutions, Country)

Instead, “The trend taking place in education a little all around the globe, but in particular in Italy, is to impart *skills* rather than *knowledge* – states Settis (2016) – and so sacrificing in the individual the peripheral vision of detail”. Therefore, by accepting Stigler’s statement on EL (1977) “economic logic doesn’t dictate what to do, but teaches how to understand the costs and benefits of the game” still seems the most secular and convenient place to start.

Zamagni (2017), reports that EL in a student: “could be an instrument for social inclusion and in the fight against inequality”, in as much as it contributes to a full grasp of awareness in the individual and to their social emancipation. The process of economic education – the opposite with respect to *political illiteracy*³ – generates a series of dangerous by-products: egalitarian and redistributive incentives, fair and sustainable commerce,

² “In the three years 2012-14 there were 206 financial education initiatives, promoted by 256 agencies acting as suppliers and/or sponsors, 144 were banks, 32 insurers and 14 pension funds for a total of 1.1 m individuals involved”.

³ *Der politische Analphabeti* by Bertolt Brecht is the tragic monkeys “one doesn’t see, one doesn’t hear and one doesn’t speak”.

positive values in the economic field, risks of social tension. Perhaps it is precisely because of the fear of these collateral effects that global economic players and international institutions support restricted information campaigns for EL, understood as consumer/saver protection, and concentrating on particulars when instead a real and total vision is necessary in order to have individuals with a *healthy and robust constitution*.

In general, it seems reductive to think of EL as a “compendium for consumers” or Financial Capability⁴ as an “instruction book for savers”, although this appears to be the sum of the approach of many educational initiatives in economics promoted by financial institutions, such as Central Banks⁵, insurance companies, regulators, the OECD, the IMF. There is a clear and unresolved conflict of interest.

Overall, there is a positive relationship between low levels of education (essentially formal) and modest human capital (seen as work and life experience⁶) with regard to “non-rational” preferences, understood as non-optimal solutions⁷ for c.d. *social and economic dilemmas*. We are often asked to take decisions, make evaluations or opt to go down one path rather than another and these *real exercises* in logic frequently have better results if one is good at solving *theoretical exercises* or has experience of similar previous events. That is, the *economic cultural* role emerges not only when we invest our money or manage our financial tools but, in general, each time we decide to take a position, vote or chose among various options (par. 4).

Financial literacy should not therefore be confused with conforming to an economic habit, a *standard model* rather. To be able to understand economic matters implies critical capacity. In general, an attitude free of prejudice and an inclination toward objective evaluation are cultivated. You go from a paternalistic *vision, another brick in wall*, to an awareness in approach where you evaluate offers one at a time, without delegating. We speak about financial literacy precisely to indicate that a minimum base is needed on which everyone can add their own intuition, sensitivity, beyond consumer protection (par. 3).

Numerous studies – according to *Finance Watch*⁸ – have demonstrated that the level of financial literacy among citizens is generally very low. This is unsurprising considering the complexity of the markets and modern financial products. However, the implications of economic sensitivity go beyond the purely financial sphere, usually meant as investment products, savings strategies or options available on the market.

One must reflect on the of impact that the interpretive ability of economic dimensions by all individuals has on all aspects of their lives, in a wide system of relationships the behaviour of others has a strong influence on their choices, that is, individual dynamics is indeed conditioned by collective dynamics and vice versa.

2 Defining questions and data

The survey method in answering questions on EL and financial capability is crucial. The administering of questions being the principal problem because it introduces an important epistemological problem: are the results from the sample a reliable predictor of the behaviour of the citizen?

An unambiguous and convincing definition for EL at an international level will be almost impossible to obtain given the problems of heterogeneity at play⁹. In addition, the results operate alongside *economic customs* in the territory, which render it difficult to have a national comparison in our country.

However, the recent study, *Global Literacy Survey, Standard & Poor's Ratings* is a good point to start and make comparisons. This uses the dataset OECD¹⁰ and the World Bank and is based on questions contributed by the Gallup World survey. In 2014, more than 150,000 adults in over 140 countries were interviewed. In the entire

⁴ Financial capability has been the subject of various studies and initiatives among which, in the US, The Financial Capability Report 2016, <https://goo.gl/JtJhqD> or, in the UK, the UK Strategy for financial capability, <https://www.fincap.org.uk> .

⁵ The European Central Bank promotes information material on <http://www.ecb.europa.eu/ecb/educational/html/index.it.html>

⁶ Finnish students are among the best (PISA survey 2015) however Greek students have superior economic competence.

⁷ The rational individual, in synthesis, is able to order their preferences for a set of results on the basis of expected usefulness.

⁸ <http://www.finance-watch.org/>

⁹ There are economic customs, habits, instruments and different languages that render a comparison unavoidably partial. An article in The Guardian, titled ‘OECD and Pisa tests are damaging education worldwide’ focused on the limits of international surveys related to formulation of standards, composition of questions and ranking systems among different countries that feed a certain educational colonialism along with correlated stress both on the teacher and student.

¹⁰ For *toolkit* OESD refer to <http://www.feduf.it/assets/allegati/Monticone-ABI-ITA.pdf>.

world, including countries with well-developed financial markets, one adult in three is financially illiterate and women, the poor and those less educated have a greater probability of having low financial awareness.

Financial awareness is measured using questions that evaluate basic knowledge of four fundamental concepts in the financial decisional process: knowledge of simple and composite interest rates, composition of interest, inflation and risk diversification.

Oecd questions. *RISK DIVERSIFICATION*. Suppose you have money. Is it safer to put the money in: a) a business or investment, or b) in many businesses or investments? *INFLATION*. Suppose in the coming ten years prices double, Even if your income doubles, will you be able to buy :a) less than you can today, b) the same c) more than you can buy today? *SIMPLE INTEREST RATE*. Suppose you take out a loan of 100 dollars. Would you prefer to pay: a) 105 dollars or b) 100 dollars plus three percent interest? *COMPOSITE INTEREST RATE*. Suppose you put money in the bank for two years and the bank pays 15% interest on the account. Will the bank pay more in the first year, in the second or add the same amount of money each year?

In this article we use the PLUS INAPP study, a wide national survey sample of the population aged between 18 and 75 (data, questionnaires and methodology can be found on www.inapp.org) in its eight edition dedicated to themes of work participation that include economic and social dimensions

In this regard, it must be emphasized that the source is not explicitly dedicated to measuring economic and financial literacy and that the questions do not follow the survey plan in this matter. However, as occurs often, the richness of investigation offered by the PLUS survey allows for particularly interesting reading regarding phenomena often considered separate. PLUS survey is a computer-assisted telephone interviewing, proxy free.

Operational, since 2006, the PLUS survey module (www.inapp.org) within the PSN (Programma Statistico Nazionale), has been administered to 24,000 individuals aged between 18 and 75 years old. Through two questions, simple simulated calculations arise which often appear when we invest our savings, use credit cards or chose a mortgage or pension and a composite indicator for EL has been derived from these

Let us look at the questions, in brackets there are the percentage results of chosen options, net of those who do not respond:

- ✓ *Indicator on interest rates*: "suppose you have €100 in a savings account, with an annual interest rate of 2%. After 5 years, how much do you think you will have in the account? More than €102 € (61%), less than €102 (10%) or exactly €102 (10%)".
- ✓ *Indicator 2 on inflation*: "If the interest rate on your savings account is 1% per year and inflation, instead, is 2% per year: after one year when using the money in your account you will be able to buy: more than before (4%), as before (14%), less than before (58%)".
- ✓ *Indicator 4 (derived) from EL*: Only 44% of people interviewed responded correctly to both questions (our synthetic EL indicator).

Furthermore, an indicator for risk aversion was created in two steps. This simultaneous presence allows for joint evaluation of EL and risk propensity, offering a profile that is rather more precise and rich in checks and controls.

- ✓ *Indicator 3 Risk Aversion*. To be operational the telephone survey system borrows the known mechanism of the TV game "affari tuoi": "There are two closed packages: one with €100.000. The other with nothing. One of them is yours. For your package, I'll offer you €20.000: do you accept? 65% accept and are *risk averse*, 4% are moderately averse as they accept a sum inferior to the *expected value* of the gain (€50.000). 18% of the sample are *risk neutral* 13% of the interviewees are *risk inclined*.

Risk Aversion.

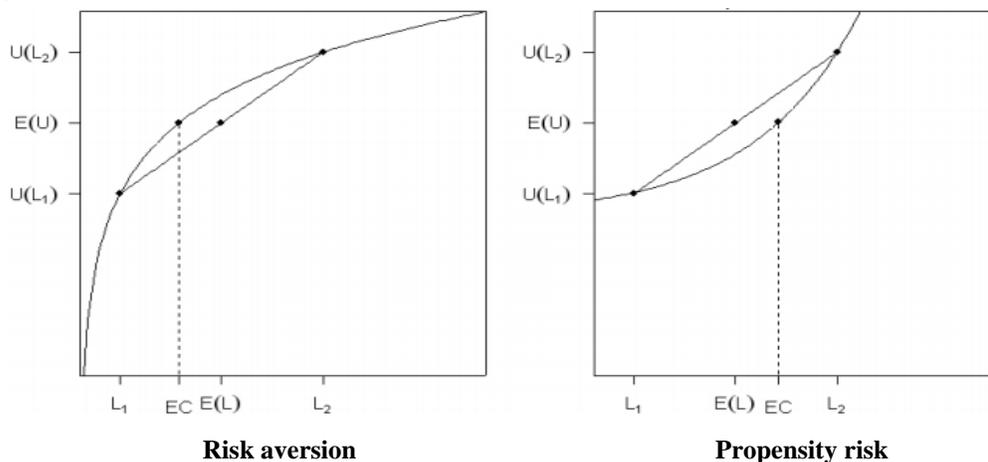
The implicit theory can be found in *fig.1* (Perotti, 2009). The result of the lottery can give an individual the amount L_1 , in this case unfavourable (with a 50% probability), or the amount L_2 , in this case favourable, (still with a probability of 50%).

The expected value from the lottery is the average of two amounts, equal to $E(L)$ and in our case €50,000. According to economic theory, however, the evaluation of the lottery is not made on only the basis of simple monetary amounts, but in relation to the utility, it provides for the individual. If we call the function of use to the individual $U(x)$, the usefulness expected from the lottery is $E(U)$, equal to the average between $U(L_1)$ and $U(L_2)$. The assured equivalent of a lottery is the amount obtainable with certainty that renders the individual indifferent to taking part in the lottery or accepting the assured amount. In the figure, the assured equivalent is the EC amount so that $U(EC)=E(U)$. The greater the risk aversion, the smaller the assured equivalent because the individual is willing to accept a lower amount so as to eliminate the uncertainty of the lottery result.

In particular, an individual is defined as “risk averse” if the assured equivalent is less than the expected value of the lottery, “neutral” if the assured equivalent is equal to the expected value and “risk inclined” if the assured equivalent is greater than the expected value.

A case of risk aversion is represented on the left, in which $EC < E(L)$.

Figure 1 – Risk aversion theory



3 Descriptive analysis

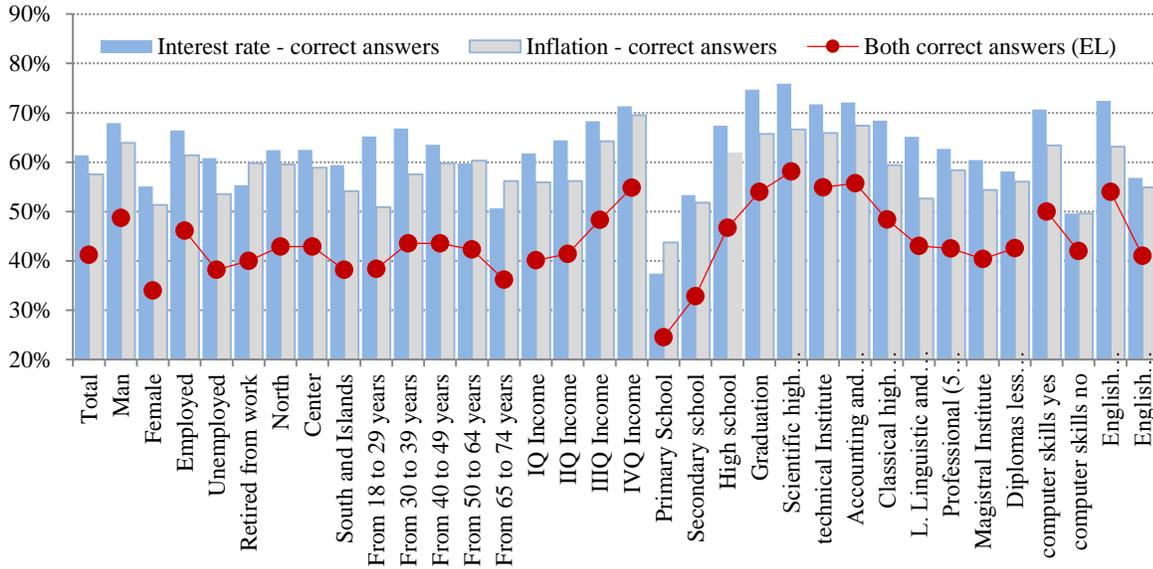
Economic literacy

In the analysis carried out, just over 40% of people answered correctly to both questions, indicating solid financial competence (figure 2). Among those more lacking in terms of EL are, females, the elderly, those from the South, those with low educational qualifications and incomes and without computer or language skills. Those more equipped had qualifications from high schools (namely scientific), accountancy or technical schools.

This evidence is in line with Lusardi (2013), Guiso and Jappelli (2008) and Jappelli (2009). The “*Global Finlit Survey*”¹¹ on EL, carried out in 2014 in 140 countries, places Italy last among European countries, with only 37% of people having EL (that is three correct answers in five, on simple and compound interest, inflation, risk diversification). In comparison, EL is at 57% in the US, 67% the UK, 66% Germany, the EU-28 at 52%, Spain 49%, France 52%.

¹¹ <http://gflec.org/initiatives/sp-global-finlit-survey/>

Figure 2 – Correct responses in relation to interest rates, inflation and EL indicator

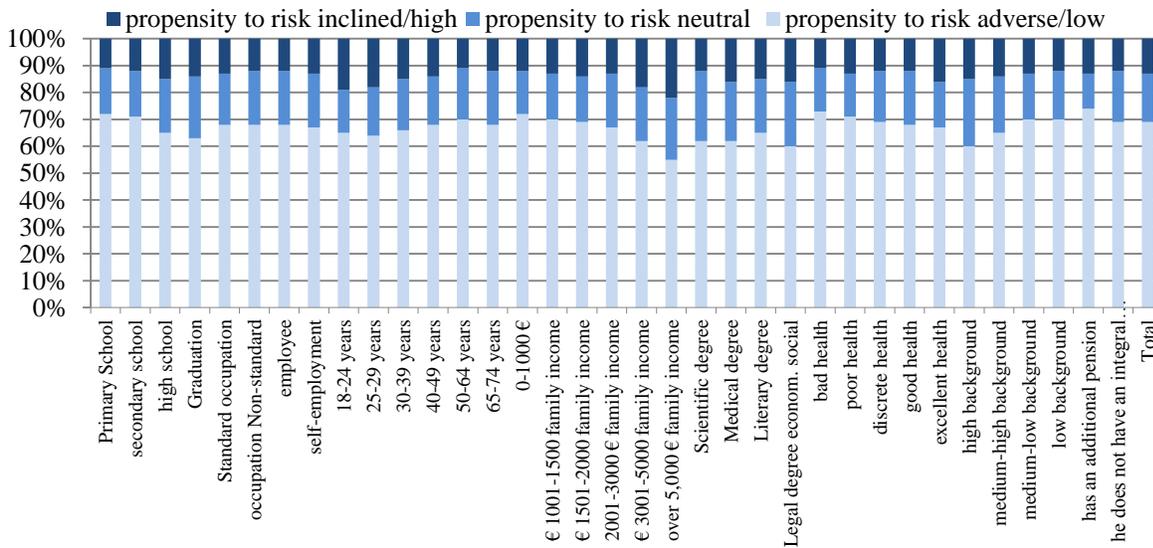


Source: Plus Survey 2016

Risk aversion

Now let us look instead at the features that characterise the *propensity to risk* in figure 3: 65% “accept” and are *risk averse*, and so take an amount that is inferior in respect to the *expected value* of the win (€50,000). The value indicated by 18% of the sample is *risk neutral*. Those with expectations higher than €50.000 are *risk inclined*, equal to 13%. The propensity to risk increases along with an increase of educational level, good health status, family condition and income, while decreasing with advanced age. The trend is obviously speculative for risk aversion.

Figure 3 – Propensity to risk: social-demographics controls.



Source: Isfol Plus 2016

Incompetent but prudent

Generally, analysis of EL is not accompanied by a set of social-demographics checks such as those in the PLUS Survey, therefore some interpretations are unique in the research of this argument. For example, a joint EL and aversion reading should be able to allow for identification of people at risk of fraud. Fortunately, an inverse relationship between financial competence and risk aversion emerges.

Various trends can be identified: 1) in general, education (particularly scientific), social activity, computer and language skills, income and family wealth are correlated to elevated EL; 2) age groups at the extreme are less risk averse than those in middle age, 3) high family wealth levels prompt lower risk aversion with regard to high income levels; 4) discipline most influences the kind of high school diploma/degree .

The typical features of “potential incompetent/economic victim” are: female, elderly, living in the South, having low education and income and no computer or language skills.

You could say: it’s their problem! However, would you be happy driving and knowing that 6 cars out of 10 you meet are driven by people who don’t understand street signs and don’t know who to give precedence to? Is this why 65% of Italians are risk averse? For people with low EL, risk aversion could be understood as a protective protein. This, on the one hand, is a trait of the character of our population, particularly prudent and saving. On the other hand, it brakes the individual initiative, reducing the willingness to take risks.

Floating mines

It is worthwhile singling out one particularly critical target: the 8% of the population or rather, 3.5 million people (tab. 2) who are “both risk inclined and financially incompetent”. A vulnerable public, exposed to fraud, gambling addiction and compulsive consumption.

It should also be remarked on how European citizens are encouraged to consume on debt (*Action Plan on Building a Capital Markets Union*) thanks to wide and easy consumer credit. Therefore, having good EL is crucial for oneself, for others and not just for economic environments.

Tab. 2 – Propensity to risk and Economic literacy, absolute percentages and values

PROPENSITY	ECONOMIC LITERACY					
	Low		High		Total	
	%	v.a.	%	v.a.	%	v.a.
Averse	39%	17.219.619	27%	11.799.379	66%	29.018.998
Moderate	1%	460.731	1%	373.517	2%	834.247
Neutral	10%	4.413.066	8%	3.342.312	18%	7.755.378
Incline	8%	3.576.043	6%	2.497.208	14%	6.073.251
Total	59%	25.669.459	41%	18.012.415	100%	43.681.874

Source: Isfol Plus 2016

All this induces urgent consideration for our country not to just deal with risks related to financial products – to protect savings and consumption – but also to defend ourselves from gambling addiction (par.4). Citizens must be able to count on "passive" protection, using simple products and operators of proven fairness, by introducing independent certification of product quality on DOC or BIO, and "active" protection by promoting the study of statistics and economic culture.

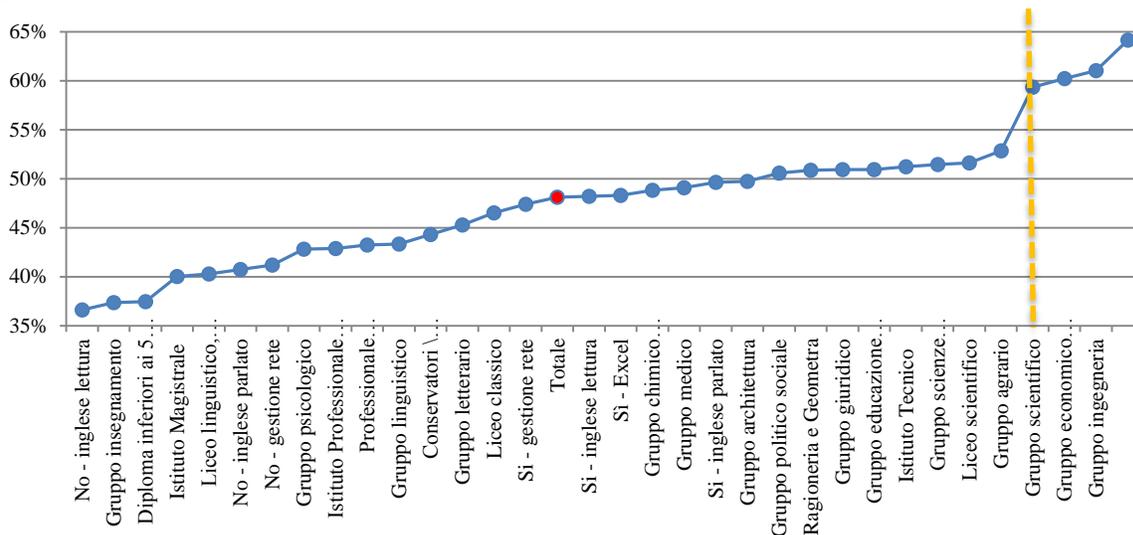
Economic culture

However, what kind of education allows for a command of this economic-financial dimension? *Figure 4* sets out the university disciplines, diplomas, and some IT and language skills possessed in relation to EL. Talking about education or training as a defensive protein is impractical since the dotted line, which indicates 50% of respondents with insufficient EL, is so to the right that it includes all those disciplines considered to be inadequate. The truth is that statistics, economics and finance are not present in high school (in part from some specific courses) so in itself a classical high school education does not increase EL. In fact, EL is a particular

case for the general principle that the higher the education and competence the greater the defences against the risks, problems, dilemmas and choices that life places upon us.

An informed citizen, able to find the answer to problems, self-confident and with independence of judgment is a social value, so having fewer people who are wrong, cheating or disregarding precedence on the street is a cost to the community as well as for the individual.

Figure 4– Economic literacy by disciplines (high school and university) and skills



Source: Isfol Plus 2016

Many institutions of Italian education system are peculiar, the labels of the chart are interpretable as follows (from left): skill No English reading, Degree Group teaching, Diploma with a duration of less than 5 years, Teaching diploma, Dipl. Linguistic, skill No English spoken, Psychological Group Degree, Professional Diploma, Professional with a duration of less than 5 years, Degree Linguistic Group, Conservatory Diploma and Academies, Literary Group Degree, Liceo Classico, skill Yes network management, Total, skill Yes English reading, skill Yes excel, Degree Chemical group, Medical group degree, skill Yes spoken English, Architecture group degree, Degree Social Political Group, Accountancy Diploma, Legal Group Degree, Degree education group, Technical Institute Diploma, Environmental Group Degree, Liceo scientifico Diploma, Graduation of the Agrario Group, Scientific group degree, Economics Group Degree, Engineering Group Degree

Economic literacy taken form numeracy items in the PIAAC, edited by Simona Mineo, INAPP

EL indicators can be derived from some *numeracy* questions in the PIAAC survey. A graph was shown to interviewees displaying a comparison between a bank’s REAL annual inflation rate trend with the FORECAST rate made by the bank’s economists. From this stimulus (graph) two questions are put to the individuals, with *numeracy* level 2 and 3: **Q1**: used to “indicate the month in which the inflation rate forecast was calculated most correctly”. Asking the interviewee to “Identify, locate and access” the information shown and give a response. **Q2**: used to evaluate the average real inflation rate. Asking the interviewee to ‘use’ the information provided and ‘act’ (with calculation, measures, counting) and give a response. The incidence of those responding correctly to Q1 and Q2 is close to the results of the major surveys: one third of people have good EL capacity. Women, the unemployed, residents in the South, the very young and those with low education levels are those less competent in economic and financial matters.

Tab. 1 – Economic Literacy PIAAC

	Q1	Q2	Q1 e Q2		Q1	Q2	Q1 e Q2
Tot	52,7	47	31,8	Tot	52,7	47	31,8
Men	58,7	46,8	35,7	16-25 age	46,7	40,7	26,8
Female	45,2	47,2	26,8	26-35 age	56	57,1	41,4
Employment	57,8	50,6	35,2	36-45 age	54,7	44,5	28,8
Unemployment	36,9	32,4	19,3	46-55 age	51,5	43,8	29,6
Student	51,6	44,6	32,7	56-65 age	54,9	48,7	30,6
Retired	59,7	37,5	19,4	Low education	42,5	37,5	21
North	62,8	52,6	37,1	Middle education	55,1	49,9	33,5
Centre	64,3	48,8	39,4	High education	62,1	54,2	43,2
South	33,1	38,5	19,6	PC expert user	52,7	47	31,8

4 The reforming aptitude

EL also applies to political choices, economic reforms, trade union negotiations, protection and the rights of each citizen. The former Minister, Fornero, like many others do not understand economic reforms because they do not fully understand the overall effects and all the implications¹² deriving from them, rather difficult to imagine in terms of reliance and direct responsibility.

This has already happened in the past. Think of the *BOND-people* displaced by the drop in yields that failed to offset the benefits of levelling rates. Alternatively, how can we not forget the terror that accompanied the "Lira-Euro" conversion or the decade-long "floating-scale inflation" debate ... changes mostly for the interest of those who criticized and (perhaps) did not understand them. Inevitably, the widespread use of forms of direct democracy, even on economic issues, will increase the risk of poorly founded and unaware choices.

In recent political consultations (Brexit, Trump), voting analysis (Colantone and Stanig, 2016; Goodwin and Heath, 2016; Inglehart and Norris, 2016) showed a bias between those who supported populist / conservative positions and candidates who fought for them. Principally, these groups are older and living in poorer and depressed areas, have lower economic and cultural levels and fewer propensities to travel and integrate with all the "barbarians"¹³. Initial evidence generally shows lower levels of EL, which has led many commentators to argue "those who understand the reforms least tend to vote against", that is to be conservative, protectionist, alien to change. This interpretation is risky for two reasons: i) Democracy presumes that the majority decides, whatever they choose, otherwise it is the end of Democracy. ii) The number of people is such as to ensure a significant "conscious" element of the choice made.

Additionally, the ideological lens must be taken into account in many salient or totem questions (Nyhan and Reifler, 2012) that do not recognize "factual evidence" when they contradict their preferences / opinions. Sometimes these positions are self-harming as the reforms will affect those who oppose them. Recent studies have analysed the effects of financial literacy on retirement choices and policy preferences... (Lusardi, 2008, Lusardi and Mitchell, 2014). Economic education is crucial not only in the private, but also in the public sphere, facilitating the introduction of virtuous and timely reforms.

In the 2014 and 2016 PLUS surveys, questions in reference to social dilemmas relating to financial-economic, ethical-environmental. This polarized the results, taking away the net choice (the "don't know" "won't answer" options) giving rise to a set of binary variables where 1 indicates "reformist choice" or change and 0 a "conservative choice".

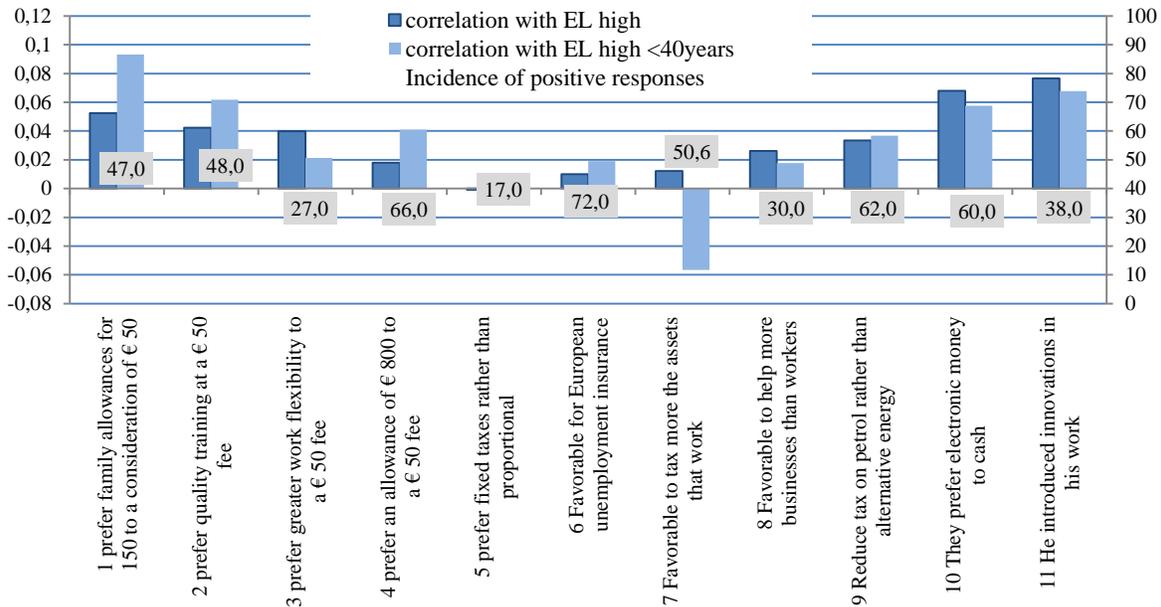
We therefore analysed the correlations between EL and controls, differentiating between the whole sample and the under 40s. The line represents the incidence of positive responses. Attached is a table with data between some options / dilemmas and EL.

¹² How can one make such technical terms as actuarial coefficients, subprime, *spread*, *brent* without trivializing.

¹³ The ancient Greeks considered all foreigners barbarian, all those who *babbled* a different language a different culture

The evidence is that cases of unconditional radical change are rare, much wider is a demand for adapting, care and maintenance of institutions, the tax system or services and for new needs and opportunities, for new needs and new times. See *Figure 5* below.

Figure 5 – Correlation (left axis) between EL and social dilemmas: all and under 40 y/o. % (right axis).



Source: Plus Survey, Panel 2014-2016. Excluding “don’t know”. Incidence refers to the first option.

Detail of options and correlations:

Option 1. People are indifferent (half in favour and half against) between having €50 more per month or €150 in family allowances; High EL is related to the choice of having more family allowances, especially among young people.

Option 2. People are indifferent (half in favour and half against.) between having €50 more per month or quality education; High EL is related to the choice of opting for training, especially among young people.

Option 3. People clearly prefer to have € 50 more per month than to have more work flexibility; High EL is related to the choice of working flexibly, but the intensity is lower among young people.

Option 4. People clearly prefer to have an allowance of €800 per month in the event of a job loss rather than having €50 more per month; High EL is poorly correlated on average with insurance coverage, the magnitude increases among young people.

Option 5. People clearly prefer to have proportional income / wealth taxes rather than fixed income taxes; High EL is unrelated to choosing to have fixed taxes for everyone.

Option 6. People are clearly in favour of a European insurance against unemployment; High EL is positively correlated with being in favour of European insurance.

Option 7. People are willing to tax property/wealth more than work; High EL is positively correlated with the choice to tax wealth more, but the relationship is negative for young people.

Option 8. People are in favour of helping people more than businesses during a crisis; High EL is not so positively correlated with the choice of helping businesses more.

Option 9. People are in favour of reducing taxes on petrol rather than on alternative energy; High EL is related to the choice of taxing petrol more.

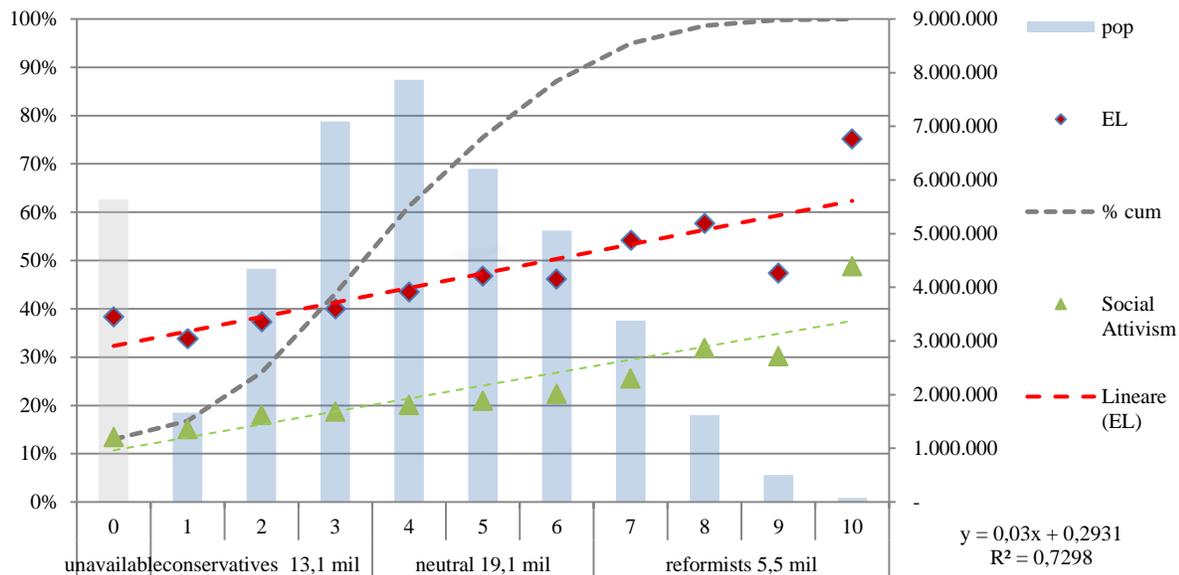
Option 10. People are in favour (especially if with high EL) of replacing cash with electronic money; High EL is positively correlated with the choice of using electronic money.

Option 11. Four out of ten people have introduced technical or organizational innovations in their work; High EL is positively correlated with this introduction.

In order to observe a positive attitude to change with regard to EL (Figure 6), a score variable was constructed using the questions listed above, adding positive responses (indicating a favour to change). A variable was obtained ranging between 0 (not open to any change) and 11 (always open to change), dividing the distribution into 4 bands:

- a) The *unavailable*, correspond to about 5.5 million people who do not respond or systematically respond “no”¹⁴ to the question. This attitude is common in many surveys given the nature of the question and may not necessarily be counted among the “not open to change” group.
- b) The *conservatives*, 13 million people who responded favourably to less than 3 out of 11 items
- c) The *neutral*, 19 million people responded favourably to between 4 and 6 items.
- d) The *reformists*, that is 5.5 million people who showed favour to change in more than 7 items

Figure 6 – Conservatives and reformists per economic literacy and social activism. Pop., %, cumulated.



Source: Plus Survey, Panel 2014-2016.

As a control, the levels of EL and social activism (having made protests, complaints or demonstrations) have been included. The trends are similar among higher levels for EL. There seems to be a greater association between high levels of EL and an openness to change and choices (a reform-friendly attitude) or rather, EL really plays a positive role in complex choices, dilemmas and options that require a manifold evaluation. The contribution of *financial education* and *social activism* to the favourable attitude to reforms is very similar.

To shed further light on the factors influencing the "propensity to change" (reformism), correlations with some controls have been shown. Among the positive factors were: *social activism*, *having a degree*, declaring oneself happy, being male, positive judgment on local services and infrastructure, being under 30, *the number of family income earners*, *family members*, *being healthy*, *able to sustain a sudden expense of € 300*. They are apparently bargaining on reformist instances of people belonging to *families with a monthly income of less than € 2,000* and people at risk. Instinctively, age and *having to delay medical treatment* (not being able to take care of themselves and loved-ones) diminishes confidence in change.

¹⁴ Speaking to a group of law students at the University of Pennsylvania on 1964, Kennedy observed: “About one-fifth of the people are against everything all of the time.” Kennedy was commenting that a sizeable percentage of voters had recently voted for Alabama Governor George Wallace, famously to “segregation today, segregation tomorrow, segregation forever.”

The negative correlation with having children is symptomatic of the difficulties of parenting (work, home, care). Being overweight is a symptom of laziness and an indicator of poor propensity to change. Indulging a talent/skill is a factor that supports change, vice versa not doing so is a brake.

Having a strong *family network* is reassuring so much so that there is a preference to maintain the status quo, as opposed to those who have put things at stake (with a *competition*, for example) and are likely to be open to change. The living space (size of the dwelling in square meters per person) is negatively correlated with change (*being overcrowded* supports the demand for change).

Some personality traits : *being happy, taking risks, finding solutions autonomously, being persistent, being creative, all contribute in varying degrees to reformism, with the exception of being tolerant and understanding* which does not seem to demonstrate tolerance to change.

It may be useful to see how the heterogeneity of our territory modifies the readings, in part (Table 3). In the Centre-North, EL, *reformist propensity, quality of services, and family value* are greater. By contrast, the proportion of *relatively poor families* (<€2,000 per month) and atypical workers is higher in the South. The incidence of people *in good health* is also quite similar.

Tab. 3 – Geographic area for some indicators, % or average.

	Economic Literacy	Inclined to reforms	Has good services	Over-weight	Good background	Atypical work	Poor (<2000 €)	Good health
North West	46%	3,89	3,47	49%	2,21	12%	22%	89%
North East	44%	3,94	3,88	49%	2,19	12%	26%	88%
Centre	45%	3,97	2,66	48%	2,27	12%	25%	90%
South	42%	3,70	2,13	58%	2,10	18%	41%	87%
Island	37%	3,50	2,07	56%	2,03	19%	44%	86%

Source: Plus Survey, Panel 2014-2016.

5 The sleep of reason

The human cognitive system is limited, so to solve problems, make judgments and make complex decisions (Simon, 1957), uses *heuristic processes* (Tversky and Kahneman, 1974) or in any case uses simple categories to find a solution. The process of association is exposed to rapid degradation: with the rise of syllogisms and assonances so that the general sense becomes less and less clear and there is a risk of rough error. For Simon and Anders Ericsson (1985) *heuristics* are simple and efficient mechanisms to explain how people make decisions about complex problems. They are a shortcut that is fine in most cases but can also lead to errors of various kinds. One is the process of *satisfaction* or contentment with the explanations found, conscious that they are the result of a simplified process. Often reconstructing analytic pathways is a burden, so laziness (or the principle of parsimony) has the upper hand in a world where skills, information, and tools to understanding should be present. Often the mind imposes a *heuristic*, mental mechanism that prevents the proper development of "productive thinking", since it settles for easy solutions (stereotypes, ideologies, preconceptions) preventing the intuitive part of the mind from being activated. Not always can we solve problems alone¹⁵. This awareness is one of the objectives of EL.

The game exploits some cognitive bias such as "near miss" (having the number before or after the winning combination). Statistically they are inconsistent relationships but people imagine (fantasize) that instead they have come close to winning¹⁶. Recently, some recent advertising claims (marketing strategy) have been

¹⁵ Women are *better social agents* in that they are less *atelophobic*, that is the have less problem in admitting they don't know the answer to a question and do not look for spontaneous solutions.

¹⁶ Luca Giordano notes that from 1/1/2018 changes to the content of an information document - fruit of a European regulation (Priips) from 2014 – to be made available to investors: will contain just 3 pages, with synthetic risk indicators, cost and scenario performance and clear calculation methods. The thorniest issues related to prospects (providing performance scenario, risk probability, numeric values or judgments) and measuring risk aversion.

introduced using dangerous oxymoron such as: “*easy credit*”, “*loans for all*” or “*life is now*” a bit like saying “*drink and drive*” or “*squander the savings*”.

There is much bad “economic culture” and the Internet is a deadly infector, an extraordinary amplifier of the effects of ignorance, fashion, trends. There is a latent risk of echoing that generates errors and this ignorance feeds wrong opinions while trends become a mania

"We are a country of illiterate mathematicians, where a lot of people admit that they do not understand anything about maths without experiencing the sense of shame or discomfort that would show if they don't know how to read or write - says Verani – “scientific thinking in Italy , is not seen as a tool to navigate reality. " He proposes a project of "civil mathematics" based on 3 pillars: 1) *Probability*. For each type of Scratch Card, 30 million are issued annually, 5 are worth € 500,000. The probability of winning € 500,000 is 1 out of 6 million. So is it a lot? Is it little? People have a precise perception, and it is disorientated.

2) The almost wins. The player often has the perception of having nearly won, of having gone close and this forces him to play again. It's a shame that every game is independent of the previous one. There is no compensating nemesis in mathematics

3) Small win / big loss. In the long run, on average, games return 75% of what is played. It is iniquitous and that is why professionals who make the "house" earn so much. If the cost of a game is €5, the average prize will be €3.50. If you continue to play infinitely for every €5 that you spend you get back €3.50. In other words, this rule is also the cost of money laundering. If you play €1.000 of the underworld, you get €750 clean.

In the era of communication, moreover, citizens believe they have “almost” perfect information and this leads them to want to handle many issues directly. This is a variation on the Akerlof lemon market: because of information asymmetry that buyers suffer from, the price of good cars is lower than correct due to the risk of getting a "lemon". This applies to the car, telephone rates, politicians, public services, and so on.

“Gambling Addiction”. The Ministry of the Economy has estimated that from 2006 (when the Bersani-Visco decree on liberalization of Gaming came into force) to 2014, revenues from State Games grew by 191% compared to the 30% revenues from central government taxes. In 2014, €84.5 billion was spent in Italy (out of a total world gaming market of €380 billion), that is €1.400 per person. Italy is the first country in Europe for gambling and the third in the world. A sector valued at 5% of GDP, with revenue to the state of €8 billion per year and employing 120,000 workers. There is one slot machine for every 155 Italians, one for every 261 Germans and one for every 372 Americans.

The Ministry of Health considers "gambling disorder" (DGA) not only a social phenomenon, but a real pathology, that makes it incapable of resisting the impulse of making bets in cash and has effects on social relationships and causes disabling health. The presence of DGA among the population is between 1% and 3%. Among players, 1.6% are considered "problematic" (800,000 people, mostly males). In 2015, 12,300 were patients within the health and social Services.

Conclusions

EL and financial capability are skills that contribute to economic education, in a complex, fast and connected world, this becomes a strategic matter, almost like having a driving license in order to move around with ease. The prevailing interpretation¹⁷ risks reducing citizens to the role of consumers who accept the financial system without criticism. Instructions are provided as though explaining the "rules of the game" to a child, simplifying articulated issues, while making them accessible to the general public, always results in a loss of information. The limit of this this "reductionist approach" emerges when systems become complex and interconnected, since component properties are only partially transferred to the system as a whole which has its own inherent properties.

¹⁷ The prevalent or *mainstream* culture creates a convergence towards average or prevalent thinking, underestimating minor or lateral theories (“progress is disobedience”), creating conservative forces which feed themselves, for example the ranking system (academic, banking, financial) where belonging is more important than value or originality.

Rather than becoming weary in formulating “economic laws”¹⁸ it would seem more useful to use an approach like that of “biological science” where refinement of the intervention obtains more satisfying results, in a *work in progress* in which continuous tension moves towards better performance and is part of the same learning process and so evolutionary.

When you want to simplify too much¹⁹, you risk fragmenting information so as to create unmanageable processing pressure, a sort of *venturi effect* of the flow of information that, by increasing speed, it becomes ungovernable and turns into a problem or, as Nate Silver would say, only serves to amplify the noise and disturb the signal ... *slander is a breeze*

The "implicit complexity" of today's world is intensified in our country by a bureaucrat/legislator prone to "complexity-induced", which often makes the tribute or norm more disgusting because it is difficult to understand, apply and pay.

The amplification of these occurrences leads to considering the urgent need for our country to activate information and training policies on economic skills and financial product protection systems, not only to safeguard savings and consumption, but also to defend itself from gambling addiction and create conditions for conscious participation, necessary to overcome the season of *counter-reforms*.

Intermediaries to act in the role of brokers are necessary for those individuals who are unable to understand the complex tools or the operators. There is a demand for professional services, trade unions, associations ... The "homo economicus" does not seem particularly "sapiens" therefore, "passive protection" through operators of proven fairness and simple products (introducing warranty certificates on the DOC Or EC) are necessary along with "active protections" through the promotion of the study of statistics and economic culture²⁰.

What are the implications for implementing these reforms among a population with low economic skills? For example, people who are unable to understand the complex balance of the demographic-occupation-pensions system - apart from the heterogeneity of their preferences, constraints, and propensities - how can they knowingly evaluate social security reform?

Something is moving: Law no. 237 of 23 December 2016 “Save Savings” identifies the need for a "national strategy for financial, insurance and social security education". The committee is composed of eleven members appointed by the Ministry of Education, Ministry Of Finance, Ministry of Economic Development, Bank of Italy, Consob, Covip, Ivass, National Consumer and Users Council, as well as a Financial Adviser and Ministry of Economy, that has the task force leadership. The task is to define strategies to increase EL – and it is no accident Boeri, President of the INPS, has begun sending "millions of orange envelopes" to inform on social security positions: "these are complex and unprecedented mechanisms; workers must make the most informed and aware choice possible ". The *sentiment* is therefore strong.

The Privacy Watchdog, Soro, notes that possessing huge amounts of personal data resulting from the analysis of choices and preferences, gleaned from social media and big-data, allows a persuasive, surreptitious activity that contributes to determining the habits of individuals and a high share of commercial exchange. This relatively recent process of *moral suasion* behaviour, implemented by a few companies, carries risks for the free market as well as for privacy and could aid EL in this field.

If you picture the consumer as conscious and proactive. Often, they are faced with the choice between paying for more quality, making an environmental choice or rewarding ethical behaviour, and even in these cases having economic skills makes the choice very conscious. Only here is a virtuous circle created in which the individual-

¹⁸ The number is order, geometric proportion is harmony. Numbers are universal and are understood more than languages. However, the hope that numbers would have put an end to all the discussions on choices, policies, and events has been badly resolved. Indeed, a multiplication of interpretations, perhaps numerically sound, analytically correct or exemplary, yet substantially wrong. Numbers have a great evocative capacity and extraordinary synthesis properties but to not have *athletic* or disambiguation properties.

¹⁹ “Complexity becomes a barrier that cannot always be overcome” (Martini e Sisti, 2009) and the operation necessary in measuring resulting variables and treatment shows to be, not only demanding, but also of little interest in terms of information.

²⁰ “Economic poverty is often caused by educational poverty: the two feed each other and in still in each other” (*conibambini.org.*)

consumer, choosing selectively, has the ability to influence the type and mode of production of goods and services. This cliché is applicable to many contexts.

It's clear that a complex tool of this kind is not synonymous with fraud, but it does involve a number of hidden costs: it requires skills, time, consulting, updating. The environments and the frequency where we have to face conditioned probabilities, intertemporal evaluations or intricate rules are increasing: from credit cards to bail-in, from insurance and national insurance choices, from property evaluations to tariffs (phone, light, tv) up to water supply or seismic risks or also those choices connected with speed, drink, diet, Not to mention the uncertainty of conditioning in the delivery of health services (vaccines), school (education), work (decentralized bargaining).

The public dilemma is either to support whatever consumption (to maximise economic growth and tax revenues) or to protect the community (inevitably slowing the economy). Therefore, understanding this question brings out the ambiguous role of the State – in precarious balance with Art.41 of the Constitution – which interprets two roles in the play, antidote now, poison now.

The OECD "witnessed a massive transfer of risk from governments and businesses to individuals". If you introduce "complex options and random benefits", you weigh the individual with more uncertainty (Beck, 1986). It seems paradoxical, therefore, to weaken - surreptitiously - the tools designed for not leaving weaker individuals alone to handle the uncertainty, a part of the social pact and our lifestyle. Today, more than ever, public insurance is appropriate and extensive financial implications must be covered. It is no coincidence that the Governor of the Bank of Italy, Visco, stressed "increasing the level of financial culture of citizens is a more important need than in the past and young people should be reached out to as a priority."

What is the answer to these incumbent dangers²¹? Knowledge remains the antidote to superficial information, which does not distinguish between the causes of spurious relations. To have economic citizenship people need to be educated. Plausibly, the increase in EL, if correctly developed, will lead to an understanding of inequalities, injustices, incorrect prices²² with inevitable escalation in social demand for responsibility.

Nevertheless, it will also have important repercussions on general habits. Think of family choices based on "irrational habits" (the man works, the woman stays at home, owning rather than using assets, using air-conditioning rather than not heating up the environment...) substituted with cost-benefit analysis, which lead to rational, fair and environmental solutions.

An increase in knowledge inevitably has disruptive social consequences²³. Having a large number of people able to give independent and authoritative judgement (*civil society*) is a formidable deterrent against poor products, misleading contracts, questionable interpretations, fake news, personality cults, insubstantial political programmes and out and out fraud.

In conclusion, we can view Education – and that of economic-financial education in particular – in the same way we see a vaccine that activates the immune system without weakening pathogenic agents. That is, limiting the progress of the infection (fraud, scams, *fake news*) provided, however, the number of people vaccinated is high (or with high EL). In fact, if the population coverage is wide, or a part of the population is immune or has high

²¹ "Fifty years ago - notes E. Laurent in his book" Economic Mythology "- the economy was the subject of debate among few. Today it's talked about in bars or on talk shows. Everyone has their say, even if they know little or nothing about the subject". The economy has substituted *Malaussène* as the scape goat. It says no to politicians, businesses, international organisations. It contributes to helping forget the public investment that has allowed progress (Mazzucato 2014, Lo Stato innovatore) seen only as public debt. It gives the idea that you can make the same product, do the same job or build the same infrastructure for less (that is, for less wages, with less material, with less care). The economy is like a *the bad cop* in a film always going for a worse scenario, a highly undesirable dystopian world. All of which is untrue and if you had better EL it would be more clear to everyone.

²² We are the end of the concept of "price". It is no longer the indicator of purchase value, the fruits of the cost of production. It depends on business strategies that modify the price on the basis of location, the provider, at the moment the purchase is perfected.

²³ Passing from a low level of economic literacy to a high level involves a social evolution: you *go from being afraid because you don't understand to causing fear because you understand*, renewing the challenge of universal suffrage or mass

defences, it also protects others, especially those weaker and at risk, who for various reasons are unable to safeguard themselves.

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